

BOOK REVIEWS

POLLINATION MECHANISMS, REPRODUCTION AND PLANT BREEDING, by R. Frankel and E. Galun with pp. xi+281, 77 figures and 39 tables. Berlin-Heidelberg—New York, Springer-Verlag, 1977. U.S. \$26,40.

Pollination Mechanisms, Reproduction and Plant Breeding is a cloth bound volume and the second in the series "Monographs in Theoretical and Applied Genetics".

The authors set out to "furnish under one cover an integrated botanical, genetical and breeding-methodological treatment of the reproductive biology of spermatophytes—mainly angiosperms." The book is intended for "biology and agricultural students at the graduate level, to plant breeders and other people interested in acquiring a broader knowledge of the reproductive biology of higher plants."

The first of the three chapters deals briefly with the significance of different pollination mechanisms and more extensively with the mode of reproduction in higher plants and the ecology and dynamics of pollination. The second chapter is devoted to self-fertilizing crops. The evolutionary aspects and mechanism of autogamy is discussed, and the chapter is concluded with a very apt description of emasculation and controlled pollination.

The third chapter, which comprises about two-thirds of the text, provides an excellent detailed discussion on sexual reproduction in higher plants, control and modification of sex, incompatibility and male sterility and the utilization of these in plant breeding.

The book is a comprehensive and up to date reference text. Nearly two-thirds of the 948 references are dated 1960 or later. There are few typographical errors and the editing appears to have been careful. The book provides factual information which had not previously been obtainable in one volume. The authors employ a very affective system of headings and subheadings which enable the reader to identify specific topics without delay.

In the South African context this book should be compulsory reading for final year plant breeding undergraduate students, post graduate students, research workers, and university teachers specializing in this field. But priced at U.S. \$26,40 it will most probably only be libraries of research institutes and universities which will acquire copies of this publication.

H. A. VAN NIEKERK

PROCEEDINGS OF THE SECOND NATIONAL WEEDS CONFERENCE OF SOUTH AFRICA, 1977, pp. 344, with 82 figures and tables, thread sewn with paper cover, R15,00 Obtainable from the publisher: A. A. Balkema, P.O. Box 3117, Cape Town.

Conferences come and go and result inevitably in: "the Proceedings of . . .". Organising committees often seek through their choice of papers, to endow their conference proceedings with a larger function and status—that are seldom achieved. The *Proceedings of the Second National Weeds Conference of South Africa* however, has a function and has attained a status that was not really aspired to by the organisers. These proceedings set out to be nothing more than the written record of 26 research contributions relating to a variety of weed problems. But because of a growing realisation of the importance of weeds in South Africa and the dearth of information about them, these proceedings find themselves elevated almost automatically to the status of a "national review" and "prescribed reading" for anyone interested in our weed problems. They must be assessed in this light.

Judged as a "national review" of current weed problems and research, these proceedings succeed in providing a fairly balanced and comprehensive coverage of the country's

weed problems, the plants and conditions that cause them, and of new developments in control and utilisation research. The emphasis is on the very grave threat that invading weed species pose to our rich and beautiful Cape Flora. In view of this emphasis, it is refreshing to also find included a paper championing one plant, black wattle, that is widely regarded as a weed by conservationists.

Other contributions of note, include works on the chemical control of: bush encroachment, Nassella tussock, wild oats; and of the weeds of vineyards, maize, wheat, clover pastures and sugar cane. There are four papers relating to the biological control of *Opuntia aurantiaca* (jointed cactus), and other pest plants. And botanical studies which provide an understanding basic to the control of weeds, have also been included, e.g. a study of the taxonomy of *Lantana*, and one on the growth kinetics of *Eichornia crassipes* (the water hyacinth).

However, the coverage is not complete, and falls short of what one would expect of a national review in that it lacks any indication of empirically evaluated research and control priorities. And, whilst the human population explosion (the most important single factor guaranteeing more and bigger weed problems in the future) figures in several papers, insufficient attention is paid to the likely affect of future land use on weed problems. The publication is also the poorer for having neither an index nor an overall summary.

Whilst these proceedings may fall short of what is required of a "national review" there is no doubt at all that they must be regarded as prescribed reading for weed scientists as well as for farmers, and conservationists who are interested in the weed problems that threaten the environment and productivity of our sub-continent. Together with the proceedings of the First National Weeds Conference of South Africa, 1974 (which is unpublished and now almost unobtainable) they provide the first modern picture of weed problems and weed research accents in South Africa.

With these proceedings, it is now possible to combine and extrapolate the estimates of various authors to derive an estimate of what weeds cost South Africa annually. However dangerous an exercise like this may be, it is important to scientist and layman alike, that it can be indulged in.

In view of their importance, is it too late to appeal for the publication of the proceedings of the First National Weeds Conference to supplement the work reviewed here?

The preparation of the various contributions was supervised by the individual authors, and since printing was by offset litho minor typing errors and inconsistencies in format have been perpetuated. These do not detract from the value of this workmanlike production. But the cover may prove to be a little on the light side for the attention that its contents will receive, and the use that will be made of them.

Dr. D. P. Annecke of the Plant Protection Research Institute (Department of Agricultural Technical Services), chairman of the organising committee, and Messrs. Agricura who made a generous donation towards printing costs, are to be congratulated on this timely publication.

M. J. WELLS

SUPPLEMENT TO AQUATIC PLANTS OF AUSTRALIA, by Helen I. Aston.

Melbourne University Press, 1973 and reprint 1977.

Reviewed: *Jl S. Afr. Bot.* 41 (4): 273 (1975).

An eight page, loose-insert supplement applicable to both the original 1973 printing and the 1977 reprint of *Aquatic Plants of Australia* has been prepared. It contains updated information on Australian aquatic plant taxa, together with a bibliography, and is automatically included with each copy of the reprint. Holders of the 1973 printing may obtain a copy of the supplement free of charge from Melbourne University Press, P.O. Box 278, Carlton South, Victoria, Australia 3053.

Self-addressed envelope (10 inches x 7 inches) MUST accompany application.